Department of Computer Engineering
CE 302/342 Study problems
Spring 2024

Question 1

Fill in the blank lines in the program segment below with the appropriate instructoions. The instructions should perform the operations defined in the comments in the lines.

```
data_here segment
        count   db   1
data_here  ends
        .
        .
        .
……; adds the contents of count to CL

……; moves the address of count to AX

……; increments the value of count

……; Store CL to memory location above count
```

Question 2

What would be the value of the CF, ZF and AF after the following instructions are executed?

```
MOV CL, 0A2 H
ADD CL, 0F h
```

CF	
ZF	
AF	

Question 3

The program given below reads the values from an array, tests if the value is **04h**, and stores a value of **0 H in its place** if it is **NOT** 04h and replaces the value with FF H if it is **04H**.
Fill in the missing program lines.
Assume the program stops if the data read is 0 .

```
data segment
Data1 db 02h , 0B2h, 04h, 0FEh, 64h
ends

code segment
start:  ; set segment registers:
        mov ax, data
        ……; write an appropriate instruction here
        mov si, offset Data1
check:  mov al, [si]
        ……..; write an appropriate instruction here
        je esit
        mov [si], 0
        ……; write an appropriate instruction here
        cmp [si], 0
        je son
        ……; write an appropriate instruction here
esit:   mov [si],0ffh
        inc si
        ……; write an appropriate instruction here

son:    mov ax, 4c00h ; exit to operating system.
        int 21h
        ends
```

Question 4

Write a short program to find 3/8 of 24 without using a divide (div) instruction.

Question 5

a) What does the code segment given below do? What would be the result of CX when the ret instruction is executed?
b) What would be an easier way of writing it?

c) Why do we use the **pop** instruction twice at the beginning of the procedure "dongu"?

```
mov     ax,10
        push    ax
        call  dongu
dongu   proc    near
        pop     bx
        pop     ax
        shl     ax,1
        mov     cx,ax
        shl     ax,2
        add     ax,cx

        push    bx
        ret
dongu   endp
```

Question 6

If CS=0C710 H and the instruction pointer is 4214H, find the:

a) Logical address
b) The offset address
c) The physical address
d) The lower and upper values of the code segment

Question 7

When you assemble the following code, the instruction "jne dongu" would be converted to machine language as "75 xx ", where xx corresponds to the value moved (number of positions moved).
If the code is located starting at 0100:0000 of the address space, what would be the value of "**xx**" ?

Assembly Language Code Address and corresponding Machine Code

```
DONGU: ADD AL,1          0100:0000 04 01
CMP AL,5                 0100:0002 35 05
JNE DONGU                0100:0004 75 xx
HLT                      0100:0006 F4
```

Question 8

Assume that SP= 2200H, AX=FA36 H and DX is A43D H. Fill in the missing values (blanks) below after the following instructions are executed.
PUSH AX
PUSH DX

After PUSH AX executed;

SP= …….
SS: ……..=FA
SS:……..=36

After PUSH DX executed;

SP= ……..
SS:21FD = ……;
SS:21FC= ……..